

Program Plan

To John C.

STAT

From

Subject Program Plan
for week starting 1 Feb., 1971

Date 28 Jan., 1971

(A) Measurement of System Response
The past two weeks have provided

a definition of some boundary conditions for
the OIM system and initiation of data

collection for measuring the OIM response. ^{STAT}

Data was collected on film using the
long-line resolution target (three targets differing
in contrast) and the Kodak sinusoidal target
at 30% modulation. This information should
provide the data to characterize OIM
system response to within tolerances
specified by sensitometry, microdensitometry,
and target characterization (information
content).

To continue in this direction and conclude with the resolution target and the sinusoidal target we should perform the following:

- (1) Scan the targets through the central area, and determine their transmittance function.
- (2) Scan the imagery through a central cross-section no more than 1 cm., and also the individual step wedges. Utilize the effective exposure hypothesis to determine the intensity function.
- (3) Plot the following curves.
 - (a) Use resolution target data plot modulation vs. line frequency for the three contrasts and the three focus positions, a total of nine

curves. Also, using data of the unprocessed imagery one can plot nine corresponding curves showing system response without filtering. The above data can be used to determine system response at and about best focus position. Another data plot of interest would be % of modulation increase over original input target vs. line frequency. The above data should be analyzed and best presentation of response data should be determined e.g. % modulation increase on comparison of processed with

unprocessed or comparison of
predicted with measured?

All three appear pertinent at
this time and data is available
with targets and films on hand.

- (b) Use sinusoidal target data and
plot processed and unprocessed
modulation vs. frequency, and
MTF taking into account
input target information, and
% modulation increase. As
above, review the curves,
their response change with
focus plus $\pm 2\mu$ about focus,
perform a reasonableness test,
plot data in preliminary
manner and develop final
form for presentation.

(B) Operational Target Processing Applications

This activity has not been pursued as heavily as desired because of the impetus on measurement. However we will compensate for this during the ~~next~~ following weeks. We have to emphasize target selection and obtaining duplicate positives for work on the Lab OIM system. Therefore the following suggestion is made.

① Review with the ^{STAT}
possibility of having people ^{STAT}
provide information of source
material

② Spend some time this week
looking at, and obtaining some
targets. Utilize ^{STAT}
personnel in this portion also
because it is essential for
the OIM application.

- ③ Utilize information obtained from Dennis R. to initiate definition of complex filters to compensate for operational cases of image blur and/or defocusing.

Using generated dupes we should perform OIM according to the heavy schedule previously outlined, on the order of 1½ days per week for personnel^{STAT}. This should remain our primary task as we build up capability for coherent in-line complex filters.